

A COMPARISON OF *TRACHINOTUS CAYENNENSIS* WITH  
*T. CAROLINUS* AND *T. PAITENSIS* <sup>1</sup>

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*Trachinotus cayennensis* Cuvier (Cuvier and Valenciennes, 1831: 417)<sup>2</sup> was described from a specimen two and one-half inches long, from Cayenne, French Guiana, and was distinguished from other *Trachinotus* indigenous to the Western North Atlantic by its high dorsal and anal fin soft-ray formulae and its low number of dorsal spines: D. V-I, 27; A. II-I, 26. Its other characters, as given by Jordan (1886: 531), are depth (2 in length) and a "very large eye." The holotype is the only specimen of the Cayenne pompano previously discussed in the literature.

Pompanos bearing high dorsal and anal fin-ray formulae taken off Venezuela and British Guiana by the U. S. Fish and Wildlife Service M/V *Oregon*, and off Surinam by the M/V *Coquette*, a vessel operated under contract to the Government of Surinam, were identified as *T. cayennensis*.

The only *Trachinotus* in the Western North Atlantic approaching *T. cayennensis* in fin-ray formulae is the common pompano, *T. carolinus* (Linnaeus). *T. paitensis* Cuvier (Cuvier and Valenciennes, 1831: 438),<sup>2</sup> of the Pacific coast of Central America and northern South America, also shows affinities to *T. cayennensis* (Meek and Goss, 1884: 129). Therefore *T. cayennensis* will be compared with these species. My data are shown in Table 1, and are supplemented by Hildebrand's (1946: 215-16) data for *T. paitensis*.

DEFINITIONS AND METHODS

All measurements were made with dividers and a rule. Those below 50 mm. were recorded to the nearest tenth mm., all above 50 mm., to the nearest half-millimeter.

Fin-ray counts: Roman numerals indicate spines; Arabic numerals indicate soft-rays. A dash indicates separation of the spinous from the soft fin, and a comma denotes a membrane

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<sup>2</sup> Authority according to Bailey, 1951.

connection or inclusion, as between the spine and the first soft-ray in all soft fins but the caudal.

Gill-raker counts: The first number indicates those rakers on the upper limb of the first gill arch; the number following the plus-sign represents those at the angle and on the lower limb. Rudiments are included where discernible, but tubercles at the ends of the arch are ignored.

Teeth: Each specimen was examined for dental development on premaxillary, vomer, palatines, tongue, and mandible.

Standard length, total length, head length, snout length and eye diameter were measured parallel to the longitudinal axis of the fish; depth was measured from the insertion of first anal spine to insertion of last dorsal spine. Snout to first dorsal spine, snout to first anal spine, and dorsal and anal base lengths are direct measurements. Dorsal and anal lobe lengths are from insertion of last spine to tip of lobe; paired fin lengths, from spine insertion to tip of fin. Caudal lobe length is the direct distance from anterior-most dorsal secondary caudal ray to tip of upper caudal lobe.

All specimen lengths are standard lengths unless otherwise stated.

Abbreviations are: USNM, United States National Museum; CNHM, Chicago National History Museum; UF, University of Florida Collections; *Ore.*, M/V *Oregon* specimens housed uncataloged in the collections of the Bureau of Commercial Fisheries, Biological Laboratory, Brunswick, Georgia (BLBG).

#### LIST OF SPECIMENS

Six specimens of *T. cayennensis* were examined: CNHM 64486, 193 mm., taken June 1-2, 1957, Lat. 06°20' to 06°19' N, Long. 54°54' to 54°49' W, (*Coquette*); CNHM 64522-1 and -2, 306 and 299 mm., taken August 27, 1958, Lat. 09°29' N, Long. 60°30' W, (*Oregon* sta. 2214); USNM 159832, 205.5 mm., taken May 30, 1957, Lat. 06°23' to 06°20' N, Long. 54°47' to 54°51' W, (*Coquette* sta. 155); *Ore* 2225, 199 mm., taken August 28, 1958, Lat. 08°32' N, Long. 59°10' W, (*Oregon* sta. 2225); *Ore*. 2214, 325 mm., taken August 27, 1958, Lat. 09°29' N, Long. 60°30' W, (*Oregon* sta. 2214).

One *T. paitensis*, USNM 77686, 285 mm., was examined from Lobos de Tierra, Peru.

Sixteen *T. carolinus*, 150.5 to 316 mm. were examined; thirteen (twelve BLBG, 150.5-209 mm., and one UF 5559, 166.5 mm.) from



Figure 1.—*Trachinotus cayennensis* Cuvier, CNHM 64522-1, 306 mm. standard length.

off the coast of Brunswick, Georgia; two (BLBG, 262 and 316 mm.), from Fort Walton Beach, Florida; and one (UF uncatalogued, 283 mm.) from Kingston Harbour, Jamaica, British West Indies.

#### DESCRIPTION OF THE SPECIES

##### *Trachinotus cayennensis*

##### Figure 1

One *T. cayennensis* has five dorsal spines; the remainder have six. Two have 26 dorsal soft-rays, one has 27, two have 28, and one has 29. One has 23 anal soft-rays; the remainder have 27. Meristic and morphometric ranges are given in Table 1.

These color notes are from two specimens (in formalin): *Ore.* 2214, 325 mm.—

*Head:* Dorsal aspect almost black with olivaceous shading above and behind eye. Preopercle and opercle with dark gray shading behind eye, grading into dingy yellow along posterior ventral margin. Branchiostegal region yellow-white. Snout and maxillary dusky.

*Body:* Back above lateral line gray-black from caudal base onto head, grading into yellow along lateral line. Belly and sides below lateral line yellow to yellow-white.

*Soft dorsal:* Light gray background with the leading edge, lobe tip, and ray-tips dusky.

*Soft anal:* Yellow-gray background on lobe; yellow on remainder. Leading edge, tip of lobe and ray-tips gray-black.

*Caudal:* Dusky-yellow with darker shadings along its perimeter and on the lobe tips.

*Pectorals:* Inner side gray-black at base and along first 9-10 soft-rays; remainder of rays white. Outer side dingy-yellow along base and onto first 5-6 rays. Leading edge of fin and tips of first 12 rays gray-black; remainder of tips white.

*Pelvics:* Creamy yellow.

*Ore.* 2225, 199 mm.—Similar to *Ore.* 2214 except for lack of yellow cast. The other specimens bear similar coloration, with the larger ones (299 and 306 mm.) possessing the yellow cast.

##### *Trachinotus carolinus*

##### Figure 2

Ginsburg (1952: 81, tables X and XI) examined 346 specimens of *T. carolinus* and reported that 51 had a dorsal spine count of 6

(V-I) while the remainder had 7 (VI-I). The range of dorsal soft-rays for 342 specimens was 23-27; 36 had 23 rays, 183 had 24, 110 had 25, 12 had 26 and one had 27. The maximum number of anal soft-rays for 346 specimens was 23; four specimens had 20 rays, 127 had 21, 188 had 22 and 27 had 23.<sup>3</sup> Of 16 *T. carolinus* I examined, two have 6 dorsal spines and the remainder have 7. Two have 23 dorsal soft-rays; eight have 24, four have 25, and two have 26. Two have 20 anal soft-rays; seven have 21; six have 22; and one has 23. Meristic and morphometric values are presented in Table 1.



Figure 2.—*Trachinotus carolinus* (Linnaeus), BLBG uncatalogued. 316 mm. standard length.

*Trachinotus paitensis*

Figure 3

The only specimen of *T. paitensis* I examined is one described and illustrated in Evermann and Radcliffe (1917: 62 and Pl. 6, fig. 1) as *T. paloma* Jordan and Starks, and in Hildebrand (1946: 216, fig. 48). My count of dorsal soft-rays is one more than that of Evermann and Radcliffe.

I find no information in the literature on the relationship of total length to standard length for *T. paitensis*. Therefore I rely on data given by Hildebrand (1941: 216): "The Mission furnished nine specimens, 75 to 270 mm. (57 to 197 mm. to base of caudal)

<sup>3</sup> *Trachinotus carolinus* (= *Gasterosteus carolinus* Linnaeus 1766: 490) was depicted as having an anal soft-ray formula of 27. However, Goode and Bean (1885: 203) stated that the holotype had 23 anal rays.

TABLE 1.—RANGES OF MERISTICS AND PROPORTIONAL MEASUREMENTS OF *T. CAYENNENSIS*, *T. CAROLINUS*, AND *T. PAITENSIS*. (THE SUPPLEMENTARY DATA ON *T. PAITENSIS* ARE FROM HILDEBRAND, 1946, pp. 215-216.)

	<i>T. cayennensis</i> (6 specimens)	<i>T. carolinus</i> (16 specimens)	<i>T. paitensis</i> (1 specimen)	<i>T. paitensis</i> (10 specimens from Hildebrand) 57-285 mm. Standard Length VI-1, 24 to 27 II-1, 22 to 25 3 to 4 + 8 to 10
	193-325 mm. Standard Length IV to V-1, 26 to 29 II-1, 23 to 27 6 to 7 + 13 to 15	150.5-316 mm. Standard Length V to VI-1, 23 to 26 II-1, 20 to 23 2 to 6 + 7 to 10	285 mm. Standard Length VI-1, 26 II-1, 23 4 + 11	
	In Stand- ard Length	In Stand- ard Length	In Stand- ard Length	In Stand- ard Length
	% of Stand- ard Length	% of Stand- ard Length	% of Stand- ard Length	% of Stand- ard Length
Total length	0.6-0.7	140.2-154.3	0.7-0.8	126.9-134.9
Depth	2.3-2.7	37.3-42.7	2.0-2.5	39.7-50.3
Snout to first dorsal spine	2.4-2.8	36.3-41.7	2.2-2.5	40.2-45.8
Snout to first anal spine	2.0-2.3	44.1-50.3	1.7-1.9	52.8-59.8
Head length	4.1-5.0	20.1-24.7	3.5-4.0	24.8-28.8
Eye diameter	12.8-19.6	5.1-7.8	12.5-17.8	5.6-8.0
Dorsal base length	1.7-1.8	56.2-57.8	1.7-1.9	53.8-57.9
Anal base length	2.0-2.2	45.6-49.7	2.4-2.7	37.3-42.0
Dorsal lobe length	3.9-5.2	19.4-25.5	3.3-4.2	23.8-30.7
Anal lobe length	4.8-5.5	18.3-21.0	3.6-4.3	23.1-28.1
Caudal lobe length	1.8-2.1	47.0-56.9	2.3-2.9	34.0-43.7
Pectoral length	4.4-5.4	18.6-22.7	3.9-4.8	20.7-25.8
Pelvic length	10.0-13.9	7.2-10.0	6.8-9.7	10.3-14.8
	In Head Length	% of Head Length	In Head Length	% of Head Length
	4.5-6.1	16.4-22.1	4.4-6.3	15.9-22.7
Snout length	3.2-4.0	25.2-31.7	3.6-4.5	22.2-27.9
Eye diameter			4.6	21.7
			4.0	24.7
			In Head Length	% of Head Length
			3.8-4.3	—
			3.7-5.6	—
			0.7-0.8*	131.6-137.1°
			2.2-2.5	—
			—	38.8
			—	39.1
			—	50.5
			3.5-4.25	23.2
			—	5.7
			—	58.9
			—	44.0
			—	21.9
			—	—
			—	—
			4.2-5.4	—
			—	—
			5.1	19.5
			9.4	10.6

\* The determination of these data is explained on page 36.

long . . .” He also alludes to USNM 77686 by stating, “The large specimen secured by R. E. Coker, which was reported to be 380 mm. long (caudal now broken) . . .”



Figure 3.—*Trachinotus paitensis* Cuvier, USNM 77686,  
285 mm. standard length.

With this information, and assuming that the minimum total length and the minimum standard length apply to the same fish and that the same is true for the maximum lengths, and by using the total and standard lengths for USNM 77686, limited ranges of proportions and percentages of total length to standard length for *T. paitensis* were determined and are included with Hildebrand's data in Table 1.

#### COMPARISONS

Table 1 shows that *T. cayennensis* differs from *T. carolinus* in the following characters: *T. cayennensis* possesses 5 or 6 dorsal spines (usually 6), 26 to 29 dorsal soft-rays and 23 to 27 anal soft-rays. *T. carolinus* possesses 6 or 7 dorsal spines (usually 7), 23 to 26 dorsal soft-rays and 20 to 23 anal soft-rays. *T. cayennensis* also has a higher gill-raker complement; proportionally greater total length, anal base length, and caudal lobe length; averages shallower depth, shorter snout to first dorsal spine distance, eye diameter, dorsal lobe length and pectoral length; and has considerably shorter head length, anal lobe length, pelvic length, and distance from snout to first anal spine.

*T. cayennensis* differs from *T. paitensis* in having a lower dorsal spine complement (*T. paitensis* has 7 spines), averaging higher

dorsal and anal soft-ray formulae (*T. paitensis* has 24 to 27 dorsal and 22 to 25 anal soft-rays), and having a much higher gill-raker complement. *T. cayennensis* also has proportionally greater total length, slightly greater anal base length and shorter pelvic length (Table 1).

*T. cayennensis* (193 to 325 mm.) shows considerably more dental development than *T. carolinus* and *T. paitensis*. Teeth are present on premaxillaries, mandible, vomer, and palatines of all *T. cayennensis*, and there are no teeth on the tongue. The smallest *T. carolinus* (150.5 mm.) has teeth on premaxillaries and mandible only; three of the four next larger *T. carolinus* (157-165.5 mm.) have teeth on the mandible only; and all larger specimens are toothless. *T. paitensis* (285 mm.) has teeth on the mandible only.

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